

NON-PUBLIC?: N
ACCESSION #: 8907170091

LICENSEE EVENT REPORT (LER)

FACILITY NAME: R. E. Ginna Nuclear Power Plant PAGE: 1 OF 7

DOCKET NUMBER: 05000244

TITLE: Turbine Trip During Manual Unblock of ATWS Mitigation System Actuation
Circuitry (AMSAC) Due To Modification Program Inadequacy
EVENT DATE: 06/01/89 LER #: 89-004-00 REPORT DATE: 07/03/89

OPERATING MODE: N POWER LEVEL: 053

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR
SECTION
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
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Technical Assistant to the Operations Manager

COMPONENT FAILURE DESCRIPTION:
CAUSE: SYSTEM: COMPONENT: MANUFACTURER:
REPORTABLE TO NPRDS:

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On June 1, 1989 at 1332 EDST, with the reactor at approximately 53% power, a turbine trip with subsequent reactor trip occurred due to a ATWS Mitigation System Actuation Circuitry (AMSAC) actuation.

The Control Room operators verified the reactor and turbine trips and performed the actions of E-0 (Reactor Trip or Safety Injection) and ES-0.1 (Reactor Trip Response). The plant was stabilized in the hot shutdown condition.

The intermediate cause of the AMSAC actuated turbine trip was determined to be due to a procedural inadequacy.

The root cause was due to miscommunication of information used to generate procedure changes concerning the AMSAC Modification.

After the cause of the event was identified, the procedure was changed based on formally approved information to prevent recurrence.

END OF ABSTRACT

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I. PRE-EVENT PLANT CONDITIONS

The unit was at approximately 53% reactor power and increasing power at 3% per hour in accordance with operating procedure O-1.2 (Plant Startup From Hot Shutdown to Full Load).

II. DESCRIPTION OF EVENT

A. DATES AND APPROXIMATE TIMES FOR MAJOR OCCURRENCES:

- o June 1, 1989, 1332 EDST: Event date and time.
- o June 1, 1989, 1332 EDST: Discovery date and time.
- o June 1, 1989, 1338 EDST: Closed both Main Steam Isolation Valves due to cooldown.
- o June 1, 1989, 1432 EDST: Unit stabilized at hot shutdown (i.e. Tavg approximately 547 degrees F)

B. EVENT:

On June 1, 1989 at 1332 EDST, the reactor was at approximately 53% full power. A power increase was in progress from the recent Annual Refueling and Maintenance Outage per step 5.8.2 of operating procedure O-1.2 (Plant Startup From Hot Shutdown To Full Load). Step 5.8.2 of O-1.2 was being performed to place the recently installed ATWS Mitigation System Actuation circuitry (AMSAC) in service.

When the Control Room operators placed the AMSAC Manual Block switch to arm, they immediately received Main Control Board Alarms K-3 (AMSAC ACTUATED) and D-32 (TURBINE VALVES) indicating the turbine had tripped due to AMSAC actuation followed immediately by a reactor trip from turbine trip with reactor power greater than 50%.

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The Control Room operators verified the reactor and turbine trips and performed the actions of E-0 (Reactor Trip or Safety Injection) and

ES-0.1 (Reactor Trip Response).

Subsequent to the trip a Reactor Coolant System (RCS) cooldown occurred due to the following:

- o There was minimum decay heat available due to the recent Annual Refueling and Maintenance Outage.
- o The "A" and "B" reheater steam supply valves failed to close as designed following the turbine trip.

Because of the above the Control Room operators closed both Steam Generator (S/G) Main Steamline Isolation Valves (MSIV) to limit the RCS cooldown and to stabilize the plant.

The RCS cooldown also caused the pressurizer level to decrease to 0% but it recovered to greater than 13% within approximately 20 minutes subsequent to the closing of the MSIV's.

The plant was stabilized at hot shutdown conditions in approximately 1 hour.

C. INOPERABLE STRUCTURES, COMPONENTS, OR SYSTEMS THAT CONTRIBUTED TO THE EVENT:

None.

D. OTHER SYSTEMS OR SECONDARY FUNCTIONS AFFECTED:

None.

E. METHOD OF DISCOVERY:

The event was immediately apparent due to alarms and indications in the Control Room.

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F. OPERATOR ACTION:

Following the AMSAC actuated turbine trip/reactor trip the Control Room operators performed the actions of E-0 (Reactor Trip or Safety Injection) and ES-0.1 (Reactor Trip Response).

Due to the RCS cooldown, the Control Room operators closed the S/G

MSIVs to stabilize the plant.

G. SAFETY SYSTEM RESPONSES:

The MSIV's were manually closed to terminate the RCS cooldown and stabilize the plant.

The AMSAC system actuation started all three Auxiliary Feedwater pumps.

III. CAUSE OF EVENT

A. IMMEDIATE CAUSE:

The reactor trip was due to a turbine trip with reactor power greater than 50%, due to an AMSAC actuation.

The AMSAC actuation was determined to be due to the AMSAC system not being completely reset after completion of post modification testing. Apparently after the post modification testing, the Instrument and Control (I&C) Technician removed the simulated 1st stage pressure signal from the test point after the test had been completed. The system was then reset using the Main Control Board reset switch. However, the 1st stage pressure timer had not completed its timing cycle that prevents reset, therefore the AMSAC TL-400 bistable (i.e. the actuation bistable) was never reset as required. With the TL-400 bistable not reset, then when the AMSAC system was armed, it actuated and tripped the turbine and started the Auxiliary Feedwater pumps.

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B. INTERMEDIATE CAUSE:

The intermediate cause of event was determined to be a procedure deficiency. Step 5.8.2 of operating procedure O-1.2 (Plant Startup From Hot Shutdown to Full Load), when arming AMSAC, did not require a check of the Fox 3 rack to ensure that all feed flow channels plus the TL-400 AMSAC bistable trip status lights were extinguished. If this check had been made it would have indicated that the AMSAC TL-400 bistable was in the trip mode and the system would need to be reset prior to arming.

C. ROOT CAUSE:

The root cause of the event was a miscommunication between Engineering and Mod Follow in the form of an inaccurate and

unapproved logic diagram. Since this drawing was used to make changes to plant procedures, the procedural deficiency and subsequent plant trip resulted.

IV. ANALYSIS OF EVENT

The event is reportable in accordance with 10 CFR 50.73, Licensee Event Report System, item (a)(2)(iv), which requires reporting of, "any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature (ESF) including the Reactor Protection System (RPS)". The reactor trip from turbine trip due to AMSAC was an automatic actuation of the RPS.

An assessment was performed considering both the safety consequences and implications of this event with the following results and conclusions:

There were no operational or safety consequences or implications attributed to the reactor trip from turbine trip due to AMSAC actuation because:

- o The turbine trip and Auxiliary Feedwater pumps operated as designed with AMSAC signal present.

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- o The Reactor Trip from turbine trip with reactor power greater than 50% full power operated as designed.

- o The Control Room operators placed the plant in the hot shutdown condition by performing actions within the guidance of the Emergency Operating Procedures for plant trip.

- o Even if the event had occurred under a more severe set of circumstances, (i.e. the reactor at 100% power and no reactor trip generated from the turbine trip), Chapter 15 of the R.E. Ginna Nuclear Power Plant Updated Final Safety Analysis Report (Ginna/UFSAR) states that the plant design is such that a total loss of external electrical load without a direct or immediate reactor trip presents no hazard to the integrity of the reactor coolant system or the main steam system. Pressure-relieving devices incorporated in the two systems are adequate to limit the maximum pressure within design limits. The integrity of the core is maintained by operation of the reactor protection system; i.e., the DNBR is maintained above the limit value.

Based on the above, it can be concluded that the public's health and

safety was assured at all times.

V. CORRECTIVE ACTION

A. ACTION TAKEN TO RETURN AFFECTED SYSTEMS TO PRE-EVENT NORMAL STATUS:

- o The cause of the AMSAC trip was determined and corrected.

B. ACTION TAKEN OR PLANNED TO PREVENT RECURRENCE:

- o Affected procedures were changed to ensure AMSAC is reset.

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- o Corrected information (logic diagram) was immediately provided to Operations through the Operations Plan of the Day.

- o Corrected information (logic diagram) was provided to Training and subsequent classroom training will be conducted.

- o Training conducted for safety-related modifications installed during the 1989 Outage will be reviewed for technical accuracy.

- o Procedures identified as having been changed due to safety related modifications installed during the 1989 outage will be reviewed for technical accuracy.

- o Evaluate the Modification Process for potential improvements in formal mechanism for review of information arising from the modification design (installation) testing process.

VI. ADDITIONAL INFORMATION:

A. FAILED COMPONENTS:

None.

B. PREVIOUS LERs ON SIMILAR EVENTS:

A similar LER event historical search was conducted with the following results: No documentation of similar LER events with the same root cause at Ginna Station could be identified.

ATTACHMENT 1 TO 8907170091 PAGE 1 OF 1

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July 5, 1989

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Subject: LER-89-004, Turbine Trip During Manual Unblock of ATWS
Mitigation System Actuation Circuitry (AMSAC), Due To
Modification Program Inadequacy
R.E. Ginna Nuclear Power Plant
Docket No. 50-244

In accordance with 10 CFR 50.73, Licensee Event Report System, item (a)
(2) (iv) which requires a report of, "any event or condition that resulted in
manual or automatic actuation of any Engineered Safety Feature (ESF) including
the Reactor Protection System (RPS)", the attached Licensee Event Report
LER-89-004 is hereby submitted.

This event has in no way affected the public's health and safety.

As a result of the holiday weekend and to ensure a complete review of
this LER, the submittal has been delayed by two days. This was reviewed with
the Region I Acting Section Chief.

Very truly yours,

Robert C. Mecredy
General Manager
Nuclear Production

xc: U.S. Nuclear Regulatory Commission
Region I
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Ginna USNRC Senior Resident Inspector

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